ACCESSION NR: AP5011002

AUTHORS: Kuz'micheva, Ye. U.; Rozanova, O. N.; Kovba, L. M.; Ippolitova, Ye. A.

TITLE: The investigation of U_2O_5

SOURCE: Moscow. Universitet. Vestnik. Seriya 2. Khimiya, no. 2, 1965, 39-43

peroxide. The material was dissolved at ... the solution for 2-40 hours. The total uranium content was determined by the ammonia method. Tetravalent uranium was determined by the vanadate or iodate ... analysis was ... with ...

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ACCESSION NR: AP[illegible]

radiation (Ni filter). Results show that [illegible], the phase sought, crystallizes

respectively (giving a(kX) first, c(kX) second): 3.935 ± 0.002 and 4.118 ± 0.001, 3.9375 ± 0.002 and 4.117 ± 0.002, and 3.938 ± 0.003 and 4.121 ± 0.003. The corresponding ratios (c/a) are 1.047, 1.045, and 1.047. It is seen that rise in temperature causes some expansion of the lattice but no appreciable change in parameter ratio. At [illegible], however, [illegible]

[illegible]

There is no such difficulty for U_2O_5 since the conversion from U_3O_8 to U_2O_5 is accompanied merely by the migration of some oxygen into the U_3O_8 lattice. Orig. art. has: 6 tables.

[illegible]

SUBMITTED: [illegible] ENCL: 00 SUB CODE: IC, SS

NO REF SOV: 006 OTHER: 002

Card 2/2

BOJANOWICZ, K.; KUZMICKI, R.; OLSZEWSKI, W.

Effect of central nervous system of coagulation and prothrombin time. Polski tygod. lek. 7 no. 36:1081-1085 8 Sept 1952. (CLML 23:5)

1. Of the First Internal Clinic (Head--Prof. J. W. Grott, M.D.) of Lodz Medical Academy.

KUZMICKI, R.

Atabrine therapy of the carrier state of Taenia saginata infection. Polski tygod. lek. 7 no. 42:1333-1336 20 Oct 1952. (CLML 24:1)

1. Of the First Internal Clinic (Head--Prof. J. W. Grott, M.D.) of Lodz Medical Academy.

BOJANOWICZ, K.; KUZMICKI, R.; OLSZEWSKI, W.

Effect of the central nervous system on secretory function of the stomach; studies with various stimuli with special reference to sound stimuli. Polski tygod. lek. 8 no.3:84-89 19 Jan 1953. (CLML 24:3)

1. Of the Internal Clinic (Head--Prof. J. W. Grott, M. D.) of Lodz Medical Academy.

KUZMICKI, K.

BOJANOWICZ, K, KUZMICKI, R, OLSZEWSKI, W.

Effect of brief sleep therapy induced by barbiturates and psychedryne, β- phenylisopropylaminosulfate, on central regulation of blood sugar. Przegl. lek., Krakow 9 no.9:229-235 1953. (CLML 25:5)

1. Of the First Internal Clinic (Head --Prof.J. W. Grott, M.D.) of Lodz Medical Academy.

KUZMICKI, R., DZIECIOLOWSKI, Z.

Treatment of carriers of Taeniarhyrchus sanginatus by atabrine administered with duodenal catheter; preliminary communication. Przegl. lek., Krakow 9 no.10:254-256 1953. (CIML 25:5)

1. Of the First Internal Clinic (Head --Prof.J.W. Grott, M.D.) of Lodz Medical Academy.

BOJANOWICZ, Kazimierz; KUZMICKI, Ryszard; OLSZEWSKI, Waclaw

Research on the effect of sound stimulant on the behavior of sugar level in blood, pulse, breathing and pulsepressure in the blood. Przegl. lek., Krakow 11 no.3:66-70 Mar 55.

1. Z I klin. chor. wewn. A.M. w Lodzi; kier. prof. dr. J.W.Grot.
(SOUNDS, effects
sound stimulant on sugar level in blood, pulse, breathing & pulse pressure in blood)
(CARBOHYDRATES, in blood
eff. of sounds stimulant on level)
(PULSE
eff. of sound stimulant on pulse & pulse pressure in blood)
(RESPIRATION, physiology
eff. of sound stimulant)

KUZMICKI, Ryszard

Studies on the efficiency of Cucurbita seeds in the treatment of Taenia sanginata infections. Wiadomosci parazyt., Warsz. 2 no. 2:25-32 1956.

(ANTHELMINTICS, therapeutic use,
Cucurbita seeds in tapeworm infect. (Pol))
(TAPEWORM INFECTION, therapy,
Cucurbita seeds. (Pol))

COUNTRY : POLAND

CATEGORY : Pharmacology, Toxicology. Chemotherapeutic Preparations. Antihelminthic Substances

ABS. JOUR. : RZhBiol., No. 12 1958, No. 56845

AUTHOR : Kuzmicki, R.

INST. : -

TITLE : A Study of the Effectiveness of the Seeds of Cucurbitae in Treating Invasion with Beef Tapeworm

ORIG. PUB. : Wiadom. Parazytol., 1956, Vol.2, No.2, 85-92

ABSTRACT : Patients with tenia infestation were given the seeds of Cucurbitae (200-400 gm per dose) and the seeds in combination with atabrine (0.4 gm per dose). With a single dose of the seeds alone, cure resulted in 12% of patients (3 persons); with two doses there was cure in 37.5% (3 persons); in the second group of patients (receiving seeds and atabrine), after a single course there was cure in 17.6% (8 patients), and after two courses there was cure in 58.3% (13 patients). -- From the author's summary.

Card: 1/1

DZIECIOLOWSKI, Zygmunt; KUZMICKI, Ryszard (Lodz)

Catarrh of the large intestine in parasitic diseases of the digestive tract. Wiadomosci parazyt., Warsz. 2 no.5 Suppl: 73-74 1956.

1. I Klinika Chorob Wewnetrznych AM.
(COLITIS, complications,
parasitic dis. of gastrointestinal tract (Pol))
(PARASITIC DISEASES, complications,
gastrointestinal parasitic dis. with colitis (Pol))
(GASTROINTESTINAL DISEASES, complications,
parasitic dis. with colitis (Pol))

KUZMICKI, Ryszard; DZIECIOLOWSKI, Zygmunt; ALEJSKI, Antoni (Lodz)

Attempted evacuation of Taenia saginata with luminal.
Wiadomosci parazyt., Warsz. 2 no.5 Suppl:75 1956.

1. I Klinika Chorob Wewnetrznych AM.
(TAPEWORM INFECTIONS, therapy,
phenobarbital (Pol))
(PHENOBARBITAL, therapeutic use,
tapeworm infect. (Pol))

DZIECIOLOWSKI, Zygmunt; KUZMICKI, Ryszard; ALEJSKI, Antoni (Lodz)

Attempted therapy of tapeworm infections with atabrine and luminal. Wiadomosci parazyt., Warsz. 2 no. 5: Suppl:76 1956.

1. I Klinika Chorob Wewnetrznych AM.
(QUINACRINE, therapeutic use,
tapeworm infect. (Pol))
(PHENOBARBITAL, therapeutic use,
tapeworm infect. (Pol))
(TAPEWORM INFECTIONS, therapy,
phenobarbital & quinacrine (Pol))

WAWRZYNSKI, Eugeniusz; DZIECIOLOWSKI, Zygmunt; KUZMICKI, Ryszard

Tolerance of the organism during atabrine therapy of parasitic diseases of the digestive system. Wiadomosci parazyt., Warsz. 2 no.6:357-365 1956.

1. Z I Kliniki Chorob Wewnetrznych Akademii Medycznej w Lodzi.
(HELMINTH INFECTIONS, therapy,
quinacrine, side eff. (Pol))
(QUINACRINE, injurious effects,
side eff. in ther. of helminth infect. (Pol))

BOROWSKA-KUZMICKA, J.; DZIECIOLOWSKA, Z.; ALEJSKI, A.; KUZMICKI, R.

Pulmonary paragonimiasis and essay of its therapy with rectal ethyl alcohol. Wiadomosci parazyt, Warsz. 3 no.6:555-563 1957.

1. Z I Kliniki Chorob Wewnetrznych AM w Lodzi.
(ALCOHOL, ETHYL, therapeutic use,
paragonimiasis, pulm., rectal admin. (Pol))
(LUNG DISEASES, therapy,
paragonimiasis, ethyl alcohol, rectal admin. (Pol))
(TREMATODE INFECTIONS, therapy,
lungs, ethyl alcohol, rectal admin. (Pol))

KUZMICKI, Ryszard; DZIECIOLOWSKI, Zygmunt; BOROWSKA-KUSMICKA, Jadwiga

Clinical observations on ancylestomiasis and associated infections with other parasites of the digestive tract. Wiadomosci parazyt., Warsz. 4 no.5-6:519-520 1958.

1. Z I Klin. Chor. Wewn. A. M. i Labor. P. S. K. nr 1 A. M. w Lodzi.
(HOOKWORM INFECTION, compl.
other parasitic dis. (Pol))

KUZMICKI, Ryszard; DZIEGIOLOWSKI, Zygmunt; BOROWSKA-KUZMICKA, Jadwiga

A case of Clonorchis sinensis infection. Polski tygod. lek. 14 no.18:819-821 4 May 59.

1. (Z I Klin. Chor. Wewn. A.M. w Lodzi; kier.: prof. dr n. med. J.W. Grott i z Laboratorium Panstw. Szpit. Klin. nr 1 A.M. w Lodzi; kier.: dr med. A. Wiewzbowska). Adres: Lodz ul. Prochnika 23.
(CLONORCHIASIS, case reports
sinensis (Pol))

KUZMICKI, Ryszard; DZIECIOLOWSKI, Zygmunt

On successful therapy with small doses of atabrine (according to Grott) of severe hypochromic anemia during the course of alambliasis. Wiadomosci parazyt., Warsz. 6 no.5:429-439 '60.

1. I Klinika Chorob Wewnetrznych A.M., Lodz
(QUINACRINE ther)
(ANEMIA HYPOCHROMIC etiol)
(GIARDIASIS compl)

KUZMICKI, Ryszard

The effect of dithiazanine (3,3-diethylthiadicarbocyanine iodide) in the therapy of trichuris infection. Wiadomosci parazyt. 7 no.2: 511-513 '61.

1. I Klinika Chorob Wewnetrznych A.M., Lodz.

(TRICHURIASIS ther) (ANTHELMINTICS ther)

KUZMICKI, Ryszard

Considerations on the problem of piperazine adipate therapy of certain parasitic diseases of the digestive tract. Wiad. parazyt. 7 no.3:567-577 '61.

1. I Klinika Chorob Wewnetrznych AM, Lodz.
(PIPERAZINES ther)

KUZMICKI, Ryszard, dr. (Lodz, Kopcinskiego 22)

On the necessity of a planned campaign aganist man's intesitne Parasites in Poland. Wiad parazyt 7 no.4/6:945-950 '61.

KUZMICKI, Ryszard

Studies on the action of cortisone administered with dithiazanine or with piperazine adipate on the course of the invasion with Trichinella spiralis (Owen, 1835) in white mice. Wiadomosci parazyt. 8 no.1:81-96 '62.

1. I Clinic for Internal Diseases, and Department of Pharmacology, Medical Academy, Lodz, Poland.

(CORTISONE pharmacol) (PIPERAZINES pharmacol)
(ANTHELMINTICS pharmacol) (TRICHINOSIS exper)

KUZMICKI, Ryszard

40 years of scientific activities of Prof. Jozef Waclaw Grott, M.D.
Wiadomosci parazyt. 8 no.4:407-412 '62.

1. I Klinika Chorob Wewnetrznych AM, Lodzi.
(BIOGRAPHIES)

KUZMICKI, Ryzard

Social importance of Lamblia intestinalis infection in the epidemiological and pathogenic light. Wiadomosci parazyt. 8 no.4:419-424 '62.

1. I Klinika Chorob Wewnetrznych AM, Lodz.
(GIARDIASIS)

BOJANOWICZ, K.; KUZMICKI, R.; ZYDOWICZ, L.

A rare case of Ascaris lumbricoides in the urinary tract. Wiad. parazyt. 8 no.5:535-538 '62.

1. I Klinika Chorob Wewnetrznych AM, Lodz.
(ASCARIASIS) (URINARY TRACT INFECTIONS)

KUZMICKI, Ryszard; SWIEZAWSKA, Ewa

Observations on the efficacy of Yomesan in the treatment of infestations with the beef tapeworm (Taenia saginata). Wiad. parazyt. 9 no.1:41-46 '63.

1. I Klinika Chorob Wewnetrznych AM, Lodz.
(TAPEWORM INFECTION) (TAENIA) (SALICYLAMIDES)
(ATHELMINTICS) (THERAPEUTICS)

KUZMICKI, Ryszard; SWIEZAWSKA, Ewa

Observations on the efficacy of dithiazanine iodide in the treatment of helminthiasis of the digestive tract. Wiad. parazyt. 9 no.1:47-56 '63.

1. I Klinika Chorob Wewnetrznych AM, Lodz.
(DITHIAZANINE) (TRICHURIASIS) (ASCARIASIS) (OXYURIASIS)
(ENTEROBIUS) (INTESTINAL DISEASES, PARASITIC)

KUZMICKI, Ryszard; SWIEZAWSKA, Ewa

Incidence of ticks of the species Dermacentor in Poland. Wiad. parazyt. 9 no.1:57-60 '63.

1. I Klinika Chorob Wewnetrznych AM, Lodz.
(TICKS)

KUZMICKI, Ryszard

Current status of studies on the human parasitic fauna in Poland. Wiad. parazyt. 9 no.4:349-358 '63.

1. I Klinika Chorob Wewnetrznych AM, Lodz.
(PARASITIC DISEASES) (PARASITES)
(EPIDEMIOLOGY)

KUZMICKI, Ryszard

Notes on mass control of tapewrom infection in Poland. Wiad. parazyt. 9 no.6:553-557 '63

1. 1 Klinika Chorob Wewnetrznych AM, Lodz.

*

KUZMICKI, Ryszard; SWITALSKA-KOWALEWSKA, Ewa

Preliminary observations on the effect of Arechin Polfa in Lambliosis. Wiad. parazyt. 10 no.4:456-457 '64

1. Oddzial Parazytologii Szpitala Miejskiego, Lodz.

KUZMICKI, Ryszard

Control of tapeworm infections in Poland. Wiad. parazyt. 11 no.1: 111-115 '65.

1. Oddzial Parazytologii Szpitala im. dra M. Madurowicza w Lodzi.

KADLUBOWSKI, Roscislaw; KUZMICKI, Ryszard

Review of scientific advances in Polish med'cal parasitology during 1961-1964. Wiad. parazyt. 11 no.1:66-82 '65.

1. Katedra Biologii i Parazytologii Lekarskiej Akademii Medycznej, Oddzial Parazytologii Szpitala im. Madurowicza, Lodz.

KUZMICKI, W.; STETKIEWICZ, S.

Causes and treatment of habitual abortions. Polski tygod.lek. 5 no.49-50:1713-1715 11 Dec 50. (CLML 20:6)

1. Of the Institute of Blood Conservation and Transfusion of the Polish Red Cross in Lodz (Director--Prof.S.Stetkiewicz,M.D.).

KUZMICKYTE, L.

SCIENCE

PERIODICAL: DARBAI. SERIJA B. TRUDY. SERIIA B. No. 3, 1958

Kuzmickyte, L. Concerning the dielectronic junctions in helium-type atoms. In Russian. p. 47.

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 2, February 1959, Unclass.

SVETIKA, Pranas, dots., zasl. agronom Litovskoy SSR; EIDZIUNAS, Jonas, agr.; BARANAUSKIENE, M., agr.; GRINEVICIUS, H., agr.; KUZMIENE, G., inzh., tekhnolog; LESINSKAS, A., agr.; PETRAUSKAS, R., inzh.-mekhanik; REPSIENE, D., agr.; RIMKUS, P., agr.; STANCEVICIUS, A., agr.; BUTKUS, A., red.; GOTLERIS, D., tekhn. red.

[Vegetable gardening] Darzininkyste. Vilnius, Valstybine politines ir mokslines literaturos leidykla, 1961. 622 p. (MIRA 15:3)

(Vegetable gardening)

LANTUKH, V., inzh.; NEYMAN, B., inzh.; KUZ'MIN, A., inzh.

A radiometer with universal power supply. Radio no.1:44-45, 48 Ja '63. (MIRA 16:1)
(Radiometer) (Radioactivity--Safety measures)

KUZ'MIN, A.

Portable superheterodyne receiver. Radio no.4:36-38 Ap '64.
(MIRA 17:9)

KUZ'MIN, A.

Band switch of a portable superheterodyne receiver. Radio no.6:42-44 Je '64. (MIRA 17:10)

DONETS, S. (Rostov-na-Donu); KUZ'MIN, A. (Irkutsk); MEDVEDEV, N. (Saratov); LICHKOV, G. (Arkhangel'sk); TSYPIN, Ye. (Sverdlovsk); GITCHENKO, I. (Sochi); GRUZINTSEVA, A. (Novosibirsk); ALIMOV, R. (Alma-Ata); GOLOBORODOV, M. (Syktyvkar)

Outposts of air transportation. Grazhd.av. 20 no.4:22-24 Ap '63. (MIRA 16:5)

(Aeronautics, Commercial)

AKMAMEDOV, A.; KOLODIY, V.; KUZ'MIN, A.; YURKHAN'YAN, B., inzh., red.

[Turkmenian oil field waters, a valuable chemical raw material] Vody neftianykh mestorozhdenii Turkmenii - tsennoe khimicheskoe syr'e. Ashkhabad, Turkmengosizdat, 1963. 38 p. (MIRA 17:6)

KUZ'MINSKIY, Semen Pavlovich; LISHUTIN, B.G., gornyy inzhener, redaktor; KUZ'MIN, A.A., retsenzent; PARTSEVSKIY, V.N., redaktor; YEFIMOVA, A.P., tekhnicheskiy redaktor.

[Fudamentals of geodesy and mine surveying] Osnovy geodezii i marksheiderii. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 207 p. (MLRA 9:6)
(Geodesy) (Mine surveying)

KUZ'MIN, A.A.

A laboratory superhigh vacuum apparatus with directly heated solid-phase titanium vaporizers. Prib. i tekh. eksp. 8 no.3: 126-130 My-Je '63. (MIRA 16:9)
(Vacuum apparatus)

KUZ'MIN, A.A., inzh., otv. za vyp.; NEKLEPAYEVA, Z.A., inzh., red.izd-va; VASIL'YEVA, N.N., tekhn. red.

[Instructions on the maintenance of engineering structures] Instruktsiia po soderzhaniiu iskusstvennykh sooruzhenii. Moskva, Transzheldorizdat, 1963. 141 p. (MIRA 17:2)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye puti i sooruzheniy.

MINTS, A.L.; RUBCHINSKIY, S.M.; VEYSBEYN, M.M.; VODOP'YANOV, F.A.; KUZ'MIN, A.A.; UVAROV, V.A.

Radiofrequency system of the accelerating field and magnetic field intensity of the 10 Bev proton synchrotron. Radiotekh. i elektron. 1 no.7:910-927 Jl '56. (MLRA 10:1)
(Synchrotron)

KUZMIN, A. A.

40738

S/120/62/000/004/003/047
E140/E420

AUTHORS: Rubchinskiy, S.M., Batskikh, G.I., Vasil'yev, A.A. Vodop'yanov, F.A., Gutner, B.M., Kuz'min, A.A., Kuz'min, V.F., Lebedev-Krasin, Yu.N., Uvarov, V.A.

TITLE: The electronic system of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 20-26

TEXT: The article surveys the electronic system of the 7 Gev proton synchrotron, the individual parts of which are described in individual articles in the same number of the journal. The electronic circuits control the continuous increase of the energy of the accelerated particles. For the chamber aperture used in the apparatus, the deviation of the momentum from the equilibrium value cannot exceed $\pm$ 5 x 10^{-3}. The instantaneous values of H must be held to within 10^{-3} at the start (f = 0.67 Mc/s) and 5 x 10^{-5} at the end of the acceleration cycle (f = 8.31 Mc/s). The synchrotron frequency varies from 3600 to 130 c/s. To keep the oscillations of phase with passage through resonance less than the adiabatic damping of these oscillations, the harmonic frequency modulation of the accelerating potential by the synchrotron frequency should not exceed 0.5 c/s and the harmonic amplitude

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S/120/62/000/004/003/047
E140/E420

The electronic system of ...

of the modulation at the same frequencies should be less than 2×10^{-4} at the start and 5×10^{-3} at the end of the cycle. The spectral density of noise modulation should be of the order of 2×10^{-3} cs^2/cs. The precision of measuring H at the instant of injection was prescribed as 3×10^{-4}. These requirements are met by a programmed frequency control with correction for the radial and phase positions of the beam, calculated for beam intensities of 10^8 to 10^{12} particles. The beam measuring system consists of a precise discrete integrator and a meter for the initial level of the magnetic field intensity. Special equipment is required for the automatic measurement of the instantaneous values of frequency and field intensity, the measurement of micromodulation of the frequency and amplitude of the accelerating potential, variations of beam intensity over the acceleration cycle, the azimuthal distribution of particle density in the bunch, and the position of the beam in the vacuum chamber. An overall block diagram of the system is given and also summary descriptions of the systems for generating the accelerating field, the acceleration control and the measuring equipment. The

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The electronic system of ...

particles are accelerated at the seventh harmonic of their frequency of revolution - in the band from 0.67 to 8.31 Mc/s. The energy increase is 4.3 keV per revolution. The accelerating elements are 2.4 m drift tubes located in 11 compensating electromagnets. The transit angle in each tube is about 25° and the ratio of accelerating potential to the potential across the tube is about 0.43. The system ensures a phase oscillation of the beam below 0.05 r and stabilizes the radial position to within ± 1 mm. There is 1 figure.

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio Engineering Institute GKAE)

SUBMITTED: April 23, 1962

Card 3/3

40750

S/120/62/000/004/018/047
E192/E382

24 6730

AUTHORS: Burshteyn, E.L., Ivanov, Yu.S. and Kuz'min, A.A.

TITLE: Method of designing the automatic-control system for radial and phase positioning of the beam in the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no. 4, 1962, 102 - 105

TEXT: The design of the automatic-control system for positioning of the beam in the synchrotron consists of determining the relationship between the coordinates of the beam and the factors which determine its motion: frequency ω_r ; high-frequency accelerating field V ; magnetic field H . The system considered is based on the radial and phase positioning and stabilization of the beam by using the frequency correction of the accelerating field. The dynamic characteristics of the beam and the characteristics of the feedback circuits are taken into account. The control system is illustrated diagrammatically in Fig. 1, where 1 - cylindrical signal electrode, 2 - are

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Method of designing ....

differential signal electrodes, 3 - phase discriminator, 4 - radial-position indicator, 5 - adding circuit, 6 - correction circuit, 7 - frequency-modulated oscillator, 8 - an amplifier-distributor, 9 - power amplifier, 10 - accelerating electrode and 11 - a programme input. The input signals from the radial and phase-positioning indicators are added (with suitable "weights") in the circuit 5 and are employed to control the frequency of the programmed oscillator. Use of the programmed oscillator makes it possible to perform the initial acceleration process when the beam is not yet bunched and to reduce the gain in the feedback circuits. The equations for the phase ψ and radial (orbital) λ deflections are in the form:

$$\psi - D(\tau\lambda) = -(\nu - \varkappa)$$

$$(D + a)\psi + b\lambda = \frac{\Omega_0^2 \tau}{\sqrt{1 + \tau^2}} \hat{\delta} \qquad (7)$$

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Method of designing ....

where

$$D = d/d\tau, \quad a = -\frac{\Omega_o^2 \tau}{\sqrt{1+\tau^2}} \quad Q_2 ,$$

$$b = \frac{\Omega_o^2 \tau}{\sqrt{1+\tau^2}} \quad (f\sqrt{1+\tau^2} - Q_1) ,$$

$$\hat{\delta} = \delta' + Q_1\xi_\lambda + Q_2\xi_\psi$$

where δ' is the frequency deviation of the accelerating field without feedback, Q_1 and Q_2 are transfer functions of the feedback networks for λ and ψ, ξ_λ and ξ_ψ are the errors of the indicators measuring λ and ψ, τ is the normalized

Card 3/5

Method of designing ....

time, $\Omega_o^2 = (2\pi qE_o \cos\varphi_s)/(eV_o \sin^2\varphi_s)$, φ_s is the equilibrium phase, ν is the deviation of the high-frequency field and $\varkappa = d(\xi\eta)/d\tau$, where η is the deviation of the magnetic field. Eqs. (7) show that for $Q_2 < 0$ the radial-phase oscillations are damped. By solving the equations for given values of external perturbation δ', ν and $\varkappa$ and given indicator errors ξ_λ and ξ_ψ, it is possible to determine the necessary feedback transfer functions Q_1 and Q_2 in order to obtain the required values of λ and ψ. Since the coefficients of Eq.(7) are variable, Q_1 and Q_2 will also be functions of time. Eqs. (7) can best be solved by means of an analogue computer. There are 2 figures.

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio-engineering Institute, GKAE)

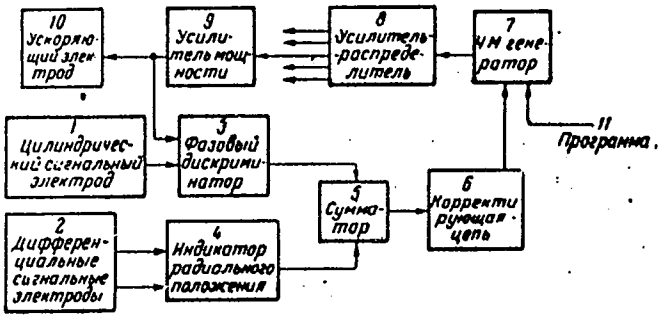
SUBMITTED: April 23, 1962

Card 4/5

S/120/62/000/004/018/047
E192/E382

Method of designing ....

Fig. 1:



Card 5/5

S/120/62/000/004/019/047
E192/E382

AUTHORS: Ivanov, Yu.S. and Kuz'min, A.A.

TITLE: System of the accelerating voltage frequency-control based on beam data

PERIODICAL: Pribory i tekhnika eksperimenta, no. 4, 1962, 106 - 111

TEXT: The frequency-control system for the accelerating voltage of the 7 GeV proton synchrotron stabilizes the radial position and damps the phase oscillations of the gravity centre of the beam. This is achieved by correcting the frequency by means of signals proportional to the radial displacement of the beam relative to the central orbit and the phase difference between the beam and the accelerating potential. A block diagram of the control equipment is shown in Fig. 1. The voltages proportional to the radial deviations and the phase difference are obtained at the outputs of the radial pick-up 26 and the phase pick-up 25 . These signals are added and are employed to modulate, via a correction network, the frequency of the local oscillator (heterodyne) 13 of the driver oscillator 24 .

Card 1/3

S/120/62/000/004/019/047
E192/E382

System of ....

The signal from the driver oscillator is applied to a pre-amplifier 6, a wideband amplifier 5 and automatically-tuned resonance amplifiers 4, from which it is fed to the accelerating electrodes 1. The control system for the output coordinates of the beam consists of two channels and contains a number of complex elements which are, in fact, in themselves automatic-control systems. The control system is designed by using the method described in the preceding article of this journal (p.102). The stability of the system at high frequencies is achieved by suitably choosing the frequency characteristics of the radial and phase pick-ups. Thus, the slope of the radial pick-up characteristic at high frequencies should be 6 db/octave. The design was based on the maximum possible values of the transfer functions Q_1 and Q_2, such that the system was still stable. These values were: $Q_1 = 70$ and $Q_2 = 0.8 \times 10^{-2}$. By using the system the coherent phase oscillations were reduced to approximately 0.05 p and the radial position of the beam was stabilized to within $\pm$ 1 mm. There are 6 figures.

Card 2/3

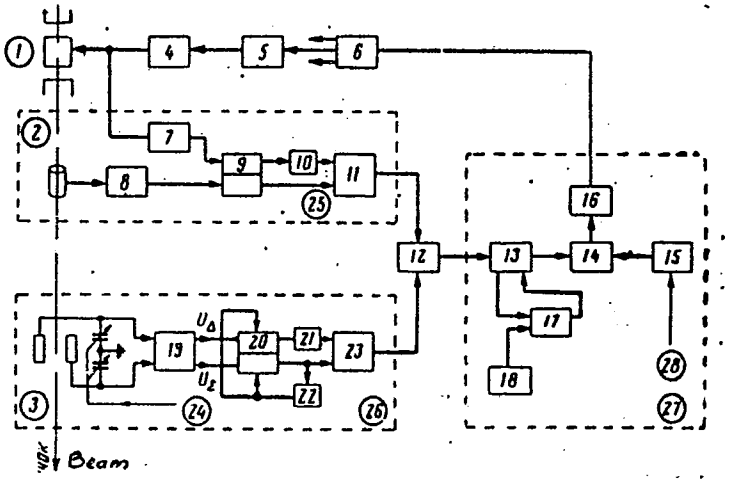
System of ....

S/120/62/000/004/019/047
E192/E382

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio-engineering Institute, GKAE)

SUBMITTED: April 5, 1962

Fig. 1:



Card 3/3

S/120/62/000/004/020/047
E192/E382

AUTHORS: Vasil'yev, A.A., Kuz'min, A.A. and Ivanov, Yu.S.

TITLE: Investigation of the beam-based frequency-control system by means of a radioelectronic model of the beam of a 7 GeV proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no. 4, 1962, 111 - 115

TEXT: Considerable difficulties are encountered when designing a control system based on the data provided by the beam of the synchrotron since the problem is nonlinear and the control "ring" contains a number of networks which are described by higher-order differential equations. An electronic simulator has therefore been devised, based on the analogy between the phase of a frequency-modulated oscillator which was synchronized by the accelerating voltage and the azimuthal position of the beam. The block schematic of the analogue is shown in Fig. 1. This consists of: 1 - a phase-detector; 2 - adding circuit; 3 - integrator; 4 - frequency-modulated oscillator; 5 - a mixer and 6 - a balanced modulator. The output voltage of the

Card 1/3

Investigation of ....

simulator U is applied to the input of the phase-detector. The voltage obtained at the output of the detector is added to the voltage U_o and this is integrated by 3 . The output of the integrator modulates the frequency of the oscillator 4 . The resulting signal is applied to the balanced modulator 6 , together with the signal from the output 1 . In this way, the high-frequency signal obtained at the output 2 has an amplitude $\alpha_r U_u B$. The analogue thus produces two signals: the first of these corresponds to the signal obtained from the electrostatic electrode of the phase pick-up, while the second signal corresponds to the signal of the radial pick-up. By using the analogue it was possible to design an accurate system for controlling the frequency of the beam. In particular, an analogue permitted the investigation of the transient processes in the control system. There are 4 figures.

Card 2/3

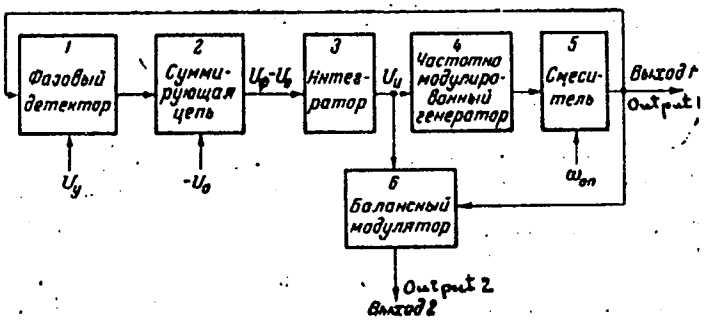
S/120/62/000/004/020/047
E192/E382

Investigation of ....

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radio-engineering Institute, GKAE).

SUBMITTED: April 6, 1962

Fig. 1:



Card 3/3

24 6750
21.2212

40751

S/120/62/000/004/023/047
E039/E420

AUTHOR: Kuz'min, A.A.

TITLE: System of measuring the beam intensity of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 121-126

TEXT: An apparatus is described which permits the continuous measurement of beam intensity with an accuracy of ±5% in the range 10^8 to 10^{12} particles. The limiting sensitivity is about 10^6 particles. A probe consisting of a cylinder with an elliptical cross-section is fixed inside and coaxial with the vacuum chamber. When a beam of protons passes through this electrode a voltage $U_e(t)$ is induced

$$U_e(t) = l_{eff}\,\sigma(t) / C_e \qquad (1)$$

where l_{eff} is the effective length of the electrode ($\simeq$ 20 cm); C_e is the total capacity of the electrode ($\simeq$ 60 pf); $\sigma(t)$ is the average charge density of the beam over the length l_{eff}. The value of l_{eff} depends on the position of the proton beam and the geometry of the electrodes and the adjoining surfaces.

Card 1/2

It can be expressed by the relation

$$\ell_{eff} = \ell_e + \tfrac{1}{2}(h_1 + h_2) \qquad (2)$$

where ℓ_e is the actual length of the electrode; h_1 is the distance between one end of the electrode and the adjacent wall of the vacuum vessel and h_2 is the distance between the other end of the electrode and a guard ring. This relation was verified experimentally by passing a charged wire through the electrode and also by means of an electron beam. The experimental value of ℓ_{eff} differed from the value obtained from relation (2) by not more than 3% which is within the experimental error. Four of these probe systems are mounted at equal distances around the vacuum chamber hence allowing four simultaneous measurements of the beam intensity. The associated electronics is also discussed in detail. There are 5 figures.

ASSOCIATION: Radiotekhnicheskiy institut GKAE (Radio-Technical Institute GKAE)

SUBMITTED: April 5, 1962

24.6700

4079

S/120/62/000/004/024/047
E039/E420

AUTHORS: Kuz'min, A.A., Kurochkin, S.S., Kiselev, Yu.S., Mamayev, V.A., Pligin, Yu.S., Chernov, P.S.

TITLE: The sys e for determining the position of the proton beam

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 126-131

TEXT: An electrode is described for determining the position of the proton beam in the acceleration chamber. It consists essentially of two pairs of insulated metallic plates fitted into the straight sections of the vacuum vessel, each of which is part of an elliptical cylinder with a cross-section equal to the cross-section of the main part of the vacuum chamber. By examining the signal induced by the beam in opposite pairs of electrodes the radial and vertical displacement of the beam can be determined. The magnitude of the induced signal depends on the displacement of the beam relative to the axis of symmetry of the electrodes, the beam intensity and the capacity of the electrodes. Calculations on the characteristics of the electrode system are made and verified experimentally. The associated

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The system for determining ...

electronics is described and its characteristics are such that the coefficient converting displacement of the beam in vertical and radial directions into volts is S = 1 V/cm. In the frequency range 0 to 5 Kc/s, the nonuniformity in this coefficient is not more than 3 db. Accuracy of measurement of beam position is $\pm$ 5%, $\pm$ 1.5 mm, relative to the half-width or half-height of the vacuum chamber for beam intensities of 2×10^8 to 2×10^{10} particles. There are 30 pairs of electrodes situated in the 15 straight sections. A typical oscillogram showed beam displacements up to 1 cm. Transverse oscillations of the beam are also measured. There are 6 figures.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE) Radiotekhnicheskiy institut GKAE (Radio-Technical Institute GKAE)

SUBMITTED: March 16, 1962

Card 2/2

24,680.

S/120/62/000/004/026/047
E032/E514

AUTHORS: Vasil'yev, A.A., Kuz'min, A.A. and Uvarov, V.A.

TITLE: Measurement of the frequency of betatron oscillations by the resonance method

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 134-137

TEXT: A description is given of a method of measuring the frequency of betatron oscillations in which the signal induced by the oscillating proton beam in pick-up electrodes is used to excite a resonance circuit. A theoretical analysis of the method is given. It is reported that experiments have shown that when the amplitude of the vertical and radial coherent betatron oscillations excited by a 15 kV voltage pulse is 0.01 cm, the method is capable of yielding an accuracy of about ±0.25%. The 15 kV perturbation of the beam was applied across a plane capacitor with a gap of 11 cm and 20 cm long. It is shown that this perturbation is essential in the case of 7 GeV protons since otherwise the signal could not be detected with the apparatus developed for the 7 GeV machine. There are 2 figures and 2 tables.

Card 1/2

Measurement of the frequency ... S/120/62/000/004/026/047
E032/E514

ASSOCIATION: Radiotekhnicheskiy institut GKAE
(Radiotechnical Institute GKAE)

SUBMITTED: April 5, 1962

Card 2/2

1.0765

S/120/62/000/004/046/047
E039/E420

24,6730

AUTHORS: Vladimirskiy, V.V., Barabash, L.Z., Pligin, Yu.S., Veselov, M.A., Talyzin, A.N., Tarasov, Ye.K., Kuz'min, A.A.

TITLE: Measurement of the frequency of transverse oscillation of the beam of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 245-247

TEXT: Periodic oscillations of the centre of gravity of separate bunches in the proton beam are observed with the aid of the signal electrodes used for determining the beam position. The signals are amplified with a wide band amplifier and observed on a double beam oscillograph using photographic recording. At 0.5 m sec after injection transverse oscillations connected with small initial oscillations of the beam at the moment of injection are observed. These transverse oscillations decay rapidly in 2 to 3 msec. The basic measurements were therefore made by artificially exciting oscillations by applying a transverse electric field ε = 1 to 1.5 KV/cm over a length of $\simeq$ 20 cm for a time of 4 to 10 μ sec. The amplitude of oscillation of the beam in one

Card 1/2

Measurement of the frequency ...

revolution is then $A = 400 e\ell/pv$ cm where p is the pulse and v is the proton velocity. Immediately after injection the amplitude is about 1 cm and after 100 msec about 0.5 mm. To facilitate analysis the time of injection was limited to about 5 μ sec for a duration of revolution of 9 μ sec and in addition a sinusoidal signal with a frequency of 7/8 the frequency of revolution of the beam is presented on the second trace of the oscillograph. Results are presented showing the frequencies of vertical and radial oscillations which are very near to resonance values: Q_z max = 12.94 and Q_r min $\simeq$ 12.55 .
There are 2 figures and 2 tables.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: May 18, 1962

Card 2/2

KUZMIN, A. A.
24,680.

10766
S/120/62/000/004/047/047
E039/E420

AUTHORS: Vladimirskiy, V.V., Gol'din, L.L., Pligin, Yu.S., Veselov, M.A., Talyzin, A.N., Tarasov, Ye.K., Koshkarev, D.G., Lapitskiy, Yu.Ya., Barabash, L.Z. Kleopov, I.F., Lebedev, P.I., Kuz'min, A.A., Batalin, V.A., Onosovskiy, K.K., Uvarov, V.A., Vodop'yanov, F.A.

TITLE: Adjustment of the acceleration regime of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 248-255

TEXT: In order to establish the optimum parameters for programming the control frequency the intensity, position, and frequency and amplitude of transverse oscillation of the beam is measured in three stages: (1) during the first revolution, (2) with a circulating beam and (3) with acceleration. For measurements on the first revolution long afterglow scintillation screens are used which are either observed visually or by means of a television camera. The screens are placed in the sections between magnet blocks; 15 in the initial part and 10 in the final part of the chamber. It is shown that the orbit does not

Card 1/2

Adjustment of the acceleration ...

deviate by more than 1.5 cm from the axis during the first revolution. Circulating beams without acceleration are obtained which continue for 20 to 30 revs. The circulating current is determined by means of a flight tube and the transverse oscillation frequency with an electrostatic probe with double vertical and horizontal plates. Scintillation screens in the form of a grid with 85% transmission are used to show the beam position and diameter for 5 to 10 revs. The beam diameter is shown to be about 4 cm under normal conditions. Investigations are carried out on the optimum form of the frequency - time relation for holding the beam in orbit. The width of the trapping region is $\pm$ 3 Kc/s for an initial frequency of 750 Kc/s which agrees well with theoretical estimates. Preliminary adjustment permitted the attainment of 6.2 Gev protons and after adjustment 7.2 Gev protons were obtained on October 25, 1961. The usual intensity on a normal cycle lies in the range 3 to 5 x 10^9. There are 7 figures and 1 table.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: April 11, 1962

Card 2/2

L 13720-63 EPR/BDS/EWT(1)/ES(w)-2 AEDC/AFFTC/ASD/SSD Ps-4/Pab-4

ACCESSION NR: AP3002735 S/0120/63/000/003/0126/0130

AUTHOR: Kuz'min, A. A. 67 64

TITLE: Laboratory superhigh-vacuum pump with directly-heated solid-phase titanium vaporizers

SOURCE: Pribory* i tekhnika eksperimenta, no.3, 1963, 126-130

TOPIC TAGS: high vacuum pump, titanium pump

ABSTRACT: A pumping set consisting of a sorption pump, a type N1S2 oil-diffusion pump, a nitrogen trap, and a special valve is described. Four titanium-molybdenum 2-mm diameter, 250-mm long current-heated rods are used as Ti vaporizers. A laboratory model of this set was built and tested with following results: fore vacuum is 5×10^{-6} to 5×10^{-7} tor; ultimate vacuum is 1.5×10^{-6} tor (water cooling) and 2×10^{-10} tor (liquid-nitrogen cooling); speed of nitrogen pumping at 10^{-7} tor (liquid-nitrogen cooling) is 2,000 lit/sec; life of one vaporizer (Ti plus 15-20% Mo) is 80 hours or more. "It is a pleasure to thank

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L 13720-63

ACCESSION NR: AP3002735

3

S. A. Vekshinskiy for his attention to the work and his valuable advices and also V. S. Zhilnin and G. A. Koretskiy for their part in carrying out the work."
Orig. art. has: 6 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 19Jul62 DATE ACQ: 12Jul63 ENCL: 00

SUB CODE: IE NO REV SOV: 006 OTHER: 002

Card 2/2

L 43088-65 EWT(m)/ EPA(w)-2/EWA(m)-2 Pab-10/Pt-7 IJP(c) JT/GS

ACCESSION NR: AT5007918 S/0000/64/000/000/0197/0201

AUTHOR: Vladimirskiy, V. V.; Gol'din, L. L.; Koshkarev, D. G.; Tarasov, Ye. K.; Yakovlev, B. M.; Gustov, G. K.; Komar, Ye. G.; Kulikov, V. V.; Malyshev, I. F.; Monoszon, N. A.; Popkovich, A. V.; Stolov, A. M.; Strel'tsov, N. S.; Titov, V. A.; Vodop'yanov, F. A.; Kuz'min, A. A.; Kuz'min, V. F.; Mints, A. L.; Rubchinskiy, S. M.; Uvarov, V. A.; Zhadanov, V. M.; Filaretov, S. G.; Shiryayev, F. Z.

TITLE: 60-70 Gev Proton Synchrotron

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 196-. 197-201

TOPIC TAGS: high energy accelerator, synchrotron

ABSTRACT: A 60-70 Gev proton synchrotron with strong focusing is being constructed not far from Serpukhov, as has been reported earlier (e.g. "Research Institute for Electro-Physical Equipment, Leningrad," in Proceedings of the International Conference on High Energy Accelerators and Instrumentation (CERN, 1959), p. 373). The present report describes parameter changes and improvements in precision structural characteristics of the accelerator, and the present state of construction in mid-1963. The parameters of the magnet are presented in a table. A small change in the original plans permitted an increase in the length of a part of the free

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L 43088-65

ACCESSION NR: AT5007918 0

sections, some of which are utilized for input and exit of beams. The super-period design is described. The lengthened sections were obtained as a consequence of shortening the focusing and defocusing blocks by 112 cm. The focusing properties of the magnetic channel were diminished consequently, but very little; and the limiting energy was lowered by 2-3 Gev. The construction of the magnet is described. Each of the magnetic blocks is divided lengthwise into 5 sub-blocks which are enveloped by the common winding. These sub-blocks consist of laminar two-millimeter silicon steel. These steel sheets were stamped out without subsequent mechanical working, and were subjected to sorting and intermixing in order to smooth out their magnetic characteristics. The sub-blocks are constricted by lateral welded plates without adhesion. Provision was made for windings on the poles in order to correct for pole nonlinearity and for variations in the drop reading. These windings make it possible to introduce artificial quadratic (square) nonlinearity that changes the dependence of the frequency of transverse oscillations during a pulse. In order to correct for straying of the residual field, provision has been made for windings on the yoke in series with the main winding. The sub-blocks must undergo calibration on a magnet stand in order to make correcting systems more precise and to determine the most convenient disposition of the sub-blocks along the r'ng. The winding of the electromagnet is made of aluminum busbars with hollow cores for cooling water. The length of the busbar is so selected that there would be no

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L 43088-65

ACCESSION NR: AT5007918

welded joints inside the coils. The winding consists of 4 sections, two of which are disposed on the upper pole and two on the lower. The most important characteristics of the electromagnet and power supply system are described in a table. Also described are the vacuum chamber and accelerating field (obtained by 53 paired resonators with ferrite rings, which operate at the 30-th harmonic of revolution and give accelerating potential of 350 kilovolts). The ring tunnel and the general arrangement of the accelerator are shown in figures and described. The building for the injector and portions of the ring tunnel from the injector to the experimental room have been completed in the main and are ready for installation of equipment. This room, in the form of a single-aisle building without internal supports, permits one to work on beams brought into the inner and outer sides. A 90-meter arch covers this room, whose overall length is 150 meters. Provisions have been made for a second experimental room at the southwest part of the ring. Orig. has 4 figures, 2 tables.

ASSOCIATION: Institute teoreticheskoy i eksperimental'noy fiziki GKAE SSSR (Institute of Theoretical and Experimental Physics, GKAE SSSR). (2) Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific Research Institute of Electrophysical Apparatus, GKAE SSSR).

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L 43088-65

ACCESSION NR: AT5007918 2

(3) Radiotekhnicheskiy institute AN SSSR (Radio Engineering Institute, Academy of Sciences SSSR). (4) Gosudarstvennyy proyektnyy institut GKAE SSSR (State Planning Institute, GKAE SSSR).

SUBMITTED: 26May64 ENCL: 00 SUB CODE: EE, MP

NO REF SOV: 002 OTHER: 001

Card 4/4

4

I 3778-66 EWT(m)/EWA(m)-2 IJP(c) GS
ACCESSION NR: AT5007965 S/0000/64/000/000/0932/0936

AUTHOR: Vodop'yanov, F. A.; Zhukovskiy, L. S.; Zalmanzon, V. B.; Ivanov, Yu. S.; Izergina, Ye. V.; Kuz'min, A. A.; Prokop'yev, A. I.; Temkin, A. S.; Rubchinskiy, S. M.

TITLE: System for the generation of the accelerating field of a 70-Gev proton synchrotron 19

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 932-936

TOPIC TAGS: high energy accelerator, synchrotron, particle beam, magnetic field

ABSTRACT: After the development of a high-precision system of frequency control of the accelerating field of the proton 50-60 Gev synchrotron with critical energy compensation (Hints, A. L., et al., Proc. International Conference on High Energy Accelerators and Instruments, CERN 1959), it was decided to achieve an alternative accelerator with transition through the critical energy, which makes it possible to increase the energy to 70 Gev. In this modification of the accelerator serious difficulties are encountered with the realization of a system for generating an accelerating field with frequency control only according to the H-program. Therefore,

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L 3778-66
ACCESSION NR: AT5007965

it was decided to achieve a system with twin frequency control: rough, according to the H-program, and precise, according to the information on the radial and phase position of the accelerated particle beam. The present report discusses the principal characteristics governing the achievement of a programmed FM-generator, a system of frequency control according to information of the position of the accelerated particle bunches, and accelerator installation. The programmed FM-generator consists of the usual elements: transducer of the derived magnetic field strength (inductive coil in the gap of the measuring electromagnet), electronic switch, tube integrator, modulator, FM-oscillator, phase manipulator, amplitude modulator of accelerating voltage, amplifier-distributor, and a system of cable contacts. To obtain energy increase per revolution of ΔE = 166 Kev for a rate of change of magnetic field strength of $\dot{H}$ = 550 oersteds/second and ϕ_s = 30°, provision is made for the application of 53 accelerator stations with rated input of 7 kilovolts and 6 kilowatts power. Provisions are also made for the short-duration increase of this voltage, 1.8 times up to the time of beam bunching (around 15 microseconds), and its slow decrease to about 2 times less toward the end of the acceleration cycle with the aim of preserving constant equilibrium phase during the fall in the magnetic field growth rate. The system of frequency control of the accelerating field according to the information on the accelerated particle beam position is similar in

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L 3778-66
ACCESSION NR: AT5007965

principle of operation to a system described by Yu. S. Ivanov and A. A. Kuz'min (*Pribory i tekhnika eksperimenta*, No. 4, 106, (1962)), which was intended to stabilize the position of the center of gravity of the beam according to radius and phase. Orig. art. has: 1 figure.

ASSOCIATION: Radiotekhnicheskiy institut AN SSSR (Radio Engineering Institute, AN SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP, EC

NO REF SOV: 001 OTHER: 001

Card 3/3

L 2275-66 EWT(m)/EPA(w)-2/EWA(m)-2 IJP(c) GS

ACCESSION NR: AT5007944 UR/0000/64/000/000/0616/0619

AUTHOR: Grishin, A. M.; Kuz'min, A. A.

TITLE: Automatic phase stabilization of the passage of a bunch of accelerated particles in a relativistic cyclotron

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 616-619

TOPIC TAGS: high energy accelerator, cyclotron, automatic frequency control, phase shift, relativistic particle

ABSTRACT: In cyclotrons with spatial variation of the magnetic field up to high energies, assurance of isochronicity necessitates that the magnetic field average over the azimuth should increase in the radial direction according to a definite law. Deviation from the dependence of the magnetic field from the required law produces a phase shift in the flight of accelerated particle bunches and disrupts optimum acceleration regime. For the 700 Mev relativistic cyclotron being planned, the permissible tolerance in accuracy and the instability in time of the magnetic field are of the order of 10^{-4}. This tolerance corresponds in magnitude to a phase shift in the passage of a bunch equal to ±1 radian. These requirements can be con-

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ACCESSION NR: AT5007944

siderably lowered if one solves the problem of phase stabilization of the passage with the help of a many-circuit automatic regulation system, in which one utilizes as the input coordinates the flight phase of the bunch of accelerated particles at several values of the radius. Each circuit of the system contains a regulated object and a regulator. The object of regulation is described by an equation that connects the variation of the regulated quantity, namely the flight phase ϕ_i at radius r_i, with the regulating action ΔH_i of the magnetic field. The change ΔH_{iB} in the magnetic field is the exciting action. The system regulator contains a measuring element, a regulating element, and an amplifying device. The measuring element serves to measure the flight phase ϕ_i; it consists of a sensing element and a phase transducer. The sensor is a device for obtaining an electrical signal proportional to the instantaneous azimuthal density of the particle bunch. This signal enters the phase transducer, where it is amplified and its phase is compared with the phase of the accelerating voltage. The regulating element is a system of 22 pairs of windings for magnetic field correction, by means of which the required dependence of the field is established upon the radius and the current source supplying these windings. The entire operating interval of the orbit radii is divided by the windings into 22 parts; in each of the parts the phase is stabilized by an individual regulation circuit for which the corresponding pair of correcting windings is the

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ACCESSION NR: AT5007944

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regulating element. Introduction of supplementary connections among the circuits permits realization of a regulation system consisting of automatic circuits, whose design can be carried out by ordinary methods. It is proposed to stabilize the flight phase of the accelerated particle bunch at any radius of the accelerator with an accuracy of ±10% for maximum deviation of the magnetic field of ±20 oersteds (±0.2%) within the range of measurement of intensity of the internal beam from 1 to 500 microamperes, with frequency of the accelerating field equal to 11-13 Mc. Experimental investigations of the sensor were carried out on an actual operating model of a cyclotron with spatially varying magnetic field in the Laboratory of Nuclear Problems of OIYaI. The limiting energy of the accelerated particles in this accelerator was 10-15 Mev for beam current of 1-10 microamperes, the frequency of the accelerating voltage being 10.5 Mc, and the voltage in the Dee 30-40 kilovolts. A model of the phase transducer was investigated on the cyclotron model of this Laboratory. "In conclusion the authors thank for their constant attention and helpful discussions during the work V. P. Dmitriyevskiy, Yu. N. Demisov, A. A. Kropin, S. M. Rubchinskiy, and F. A. Vodop'yanov." Orig. art. has: 2 figures, 3 formulas.

ASSOCIATION: Radiotekhnicheskiy institut AN SSSR (Radio Engineering Institute, AN SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 000 OTHER: 000

Card 3/3 DP

L 1261-66 EPA(w)-2 /EWT(m)/EWA(m)-2 IJP(c)

ACCESSION NR: AP5024378 UR/0286/65/000/015/0063/0063
621.384.644

AUTHOR: Kuz'min, A. A.

TITLE: A method for stabilizing the magnetic field of a cyclotron, Class 21, No. 173344

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15, 1965, 63

TOPIC TAGS: cyclotron, magnetic field, particle acceleration

ABSTRACT: This Author's Certificate introduces a method for stabilizing the magnetic field of a cyclotron with respect to the transit phase of the accelerated particle beam. The signal-to-noise ratio is improved by using the upper harmonics of the signal induced by the beam in the sensing elements of the transit phase data unit for controlling the magnetic field strength.

ASSOCIATION: Predpriyatiye Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR (Enterprise of the State Committee for the Use of Atomic Energy SSSR)

SUBMITTED: 18Jul63 ENCL: 00 SUB CODE: NP
NO REF SOV: 000 OTHER: 000

Card 1/1

L 1270-66

ACCESSION NR: AR5010778 UR/0274/65/000/003/A020/A020
621.372.061:621.375

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz'. Sv. t., Abs. 3A131

14
B

AUTHOR: Kuz'min, A. A.

TITLE: Distributed-amplification stage with quadripoles having arbitrary internal structures

CITED SOURCE: Tr. Tomskogo in-ta radioelektron. i elektron. tekhn. v.2, 1964,90-91

TOPIC TAGS: distributed amplifier

TRANSLATION: A formula is derived for the gain of an amplifier that contains composite-structure quadripoles. The circuit parameters are determined from the known parameters of the constituent quadripoles. Parameters of electron-tube circuits are introduced. The elements are calculated of a transfer matrix which is raised to n-th power for cascading identical amplifiers. The design formulas are suitable for both concentrated-parameter and distributed-parameter amplifiers. As an example, a long-line amplifier is investigated. The inductance of tube lead-in wires is allowed for. Also formulas are derived for calculating the frequency and phase characteristics. Bibl. 2.

Card 1/1 KC SUB CODE: EC ENCL: 00

L 2278-66 EWT(m)/EPA(w)-2/EWA(m)-2 IJP(c) GS

ACCESSION NR: AT5007966 UR/0000/64/000/000/0941/0945

AUTHOR: Kuz'min, A. A.

TITLE: Design of system characteristics of automatic frequency control of accelerating voltage according to the beam in proton synchrotrons

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, 941-945

TOPIC TAGS: high energy accelerator, proton synchrotron, automatic frequency control

ABSTRACT: In proton synchrotrons the movement of the beam is influenced on the whole by three perturbing factors which determine synchrotron oscillations and radial displacement of the beam center of gravity: a) deviation of the frequency ω_r of accelerating field from the rated value $\delta = \frac{\Delta\omega_r}{\omega_r}$; b) deviation of the amplitude of the accelerating field $\nu = \frac{\Delta V}{V_0}$; and c) difference of the magnetic field growth rate from the rated value $K = \frac{\Delta H}{H_0}$. Without use of the information on the beam it is very difficult to ensure the required smallness of these perturbing factors, especially δ.

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Therefore most actual operating and planned proton synchrotrons utilize the so-called beam control system. In these systems the information on the radial (Δr) and phase ($\Delta\phi = \phi - \phi_s$) displacements of the beam center of gravity is transformed into controlling signals which correct the above perturbing factors. Ordinarily one applies only the accelerating field frequency correction, because the stabilization of the accelerating field's amplitude and the magnetic field rate of growth relative to their rated values can be realized sufficiently simply with the necessary accuracy. Thus the beam control system represents an automatic control system in which the controlled object is the center of gravity of the accelerated particle beam with input coordinates Δr and $\Delta\phi$, and the controlling parameter is the frequency of the accelerating field. Certain considerations on the design of beam control system have been published earlier (Burshteyn, E. L., Ivanov, Yu. S., Kuz'min, A. A. *Pribory i tekhnika eksperimenta*, No. 4, 102 (1962)). These works, however, do not consider in sufficient detail and completeness the influence of the characteristic errors of the transducers which transform the information on the radial and phase positions of the beam center of gravity to the controlling signal. The present work expounds in detail the procedure for the design of a beam control system which permits one to make a clear choice of the feedback transfer functions with consideration for the characteristic transducer errors and the actual properties of the

L 2278-66

ACCESSION NR: AT5007966

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control circuit elements. The installation of the beam control system, developed in accordance with the procedure described in this work, functions successfully in the 7-Bev accelerator. "In conclusion the author thanks Yu. S. Ivanov for his helpful discussions." Orig. art. has: 2 figures, 15 formulas.

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ASSOCIATION: Radiotekhnicheskiy institut AN SSSR (Radio Engineering Institute, AN SSSR)

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SUBMITTED: 26May64 ENCL: 00 SUB CODE: NP

NO REF SOV: 001 OTHER: 001

Card 3/3 DP

L 8541-66 EWT(1)/EWA(h)

ACC NR: AR5018776 SOURCE CODE: UR/0274/65/000/007/B064/B065

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz'. Svodnyy tom, Abs. 7B448

AUTHOR: Kuz'min, A. A.

TITLE: Matrix method of analyzing TW amplifiers which allows for transfer admittance of amplifying elements

CITED SOURCE: Tr. Tomskogo in-ta radioelektron, i elektron. tekhn. v. 3, 1964, 143-150

TOPIC TAGS: electronic amplifier, TW amplifier, distributed amplifier

TRANSLATION: The theory of distributed amplifiers has been based on a representation of the amplifier as two transmitting lines interconnected only by dependent sources. The transfer admittance of the amplifying elements has been neglected. At present, transistors and high power tubes are used in the TW amplifiers; these devices have a considerable transfer admittance which causes distorted frequency response and self-excitation. The amplifier has been analyzed by a matrix method which has allowed for the internal feedbacks; however, the method has been developed only for specific amplifier circuits. A generalized matrix method for analyzing TW amplifiers, in the case of an n-port ($n = 4$), is presented. The matrices of A-parameters are developed; they are independent of the stage internal structure and allow for transfer admittance. A formula for the amplifier gain is derived, and a stability condition is formulated

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for a distributed-amplification stage that has T-filters and is matched to its load. Bib 5.

SUB CODE: 09

jw

Card 2/2

L 13795-65 [illegible]

ACCESSION NR: AP4047244 S/0142/64/007/004/0480/0486

AUTHOR: Kuz'min, A. A.

B

TITLE: Analysis of the distributed amplifier with an allowance for the transfer admittance of amplifying elements

SOURCE: IVUZ. Radiotekhnika, [illegible] 480-488

TOPIC TAGS: amplifier, distributed amplifier, transfer admittance

ABSTRACT: As transistors (including [illegible] types) have often been used in distributed amplifiers and as their [illegible] transistors [illegible]

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APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000928020(

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ACCESSION NR: AP4047244

component quadripoles. A formula for the gain of a stage with matching half-

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7/0213
SOV/80-33-3-14/47

AUTHORS: Kuz'min, A. A., Safonov, Ye. K.

TITLE: Silicon Refining by the Iodide Method

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 3, pp 591-597 (USSR)

ABSTRACT: A modification of the F. B. Litton, H. C. Andersen (see U.S. references) method is described. In the present method, the temperature of the apparatus itself is reduced to 100° C whereas in the former it was 400 to 500° C. This is done by placing the charge in a tungsten wire basket, and leaving a space between it and the apparatus walls. The charge temperature remains at 400 to 500° C and that of the tantalum ribbon (heating strip) at 1,050° C. The SiI_4 vapor pressure was 1.2 mm Hg. A schematic diagram of the apparatus is shown in Fig. 1. One of the advantages of the lower wall temperature is the possibility of condensing some of the impurities on them.

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Silicon Refining by the Iodide Method

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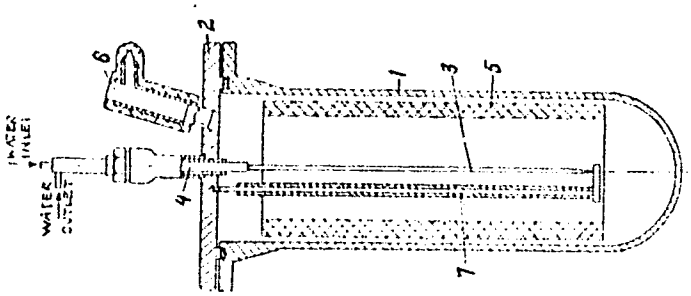
Fig. 1. Apparatus for refining silicon by the iodide method. (1) Body (volume, 3000 cm^3; (overall diameter, 100 mm); (2) teflon cover; (3) heating strip; (4) electric leads; (5) basket with raw material; (6) view tube (and SiI_4 inlet); (7) quartz tube.



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A typical result of the purification is given in Table 1. This method produces silicon suitable for use in solar batteries and may be used for the purifica tion of

Table 1. Results of the technical analysis of silicon

SAMPLE	CONTENT OF IMPURITIES (wt % x 10^3)			
	Fe	Al	Ca	Ti
TECHNICAL SILICON	270	500	300÷400	35
SILICON AFTER REFINING	5	50	6	8

other elements, for which the required pressure of iodide vapors is lower than that reached at the temperature required for tying up the iodine with the raw material. There are 3 tables; 5 figures;

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Silicon Refining by the Iodide Method

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and 9 references, 2 Soviet, 4 German, and 3 U.S. The U.S. references are: H. C. Thenerer, Bell Labs Record, 33, 9327 (1955); F. B. Litton, H. C. Andersen, J. Electrochem. Soc., 101, 287 (1954); H. C. Andersen, L. H. Beltz, J. Am. Chem. Soc., 75, 19, 4828 (1953).

SUBMITTED: July 13, 1959

Card 4/4

VILENSKAYA, R.M.; FRENKEL', S.Ya., red.; ALEKSEYEVA, V.P., bibliogr.red.; KUZ'MIN, A.A., vedushchiy red.; SIL'CHENKOVA, V.V., tekhn.red.

[Bibliographic index of works of scientific personnel of the Institute of High Molecular Weight Compounds of the Academy of Sciences of the U.S.S.R., 1949-1959] Bibliograficheskii ukazatel' rabot nauchnykh sotrudnikov Institute vysokomolekuliarnykh soedinenii AN SSSR, 1949-1959 gg. Sost.R.M.Vilenskaia. Pod red. S.IA. Frenkelia. Leningrad, 1961. 103 p. (MIRA 14:2)

1. Akademiya nauk SSSR. Institut vysokomolekulyarnykh soyedineniy.
(Bibliography--Macromolecular compounds)

S/126/62/014/005/014/015
E073/E535

AUTHORS: Kuz'min, A.A. and Palatnik, L.S.

TITLE: Tension of titanium vapour above Ti-Mo alloys

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.5, 1962, 795-797

TEXT: By means of the Langmuir method, the rate of vaporization in vacuum of a wire, which is heated by an electric current, was measured. Ingots of alloy containing 11.47, 22.18 and 34.3 wt.% molybdenum were produced and from these wire was produced by cold drawing with intermediate annealing in vacuum. The results, plotted as log P (atm) vs. $10^4/T$, were utilised for calculating the vapour tension using the following approximate equation of the dependence (on temperature and composition) of the vapour tension of titanium over a Ti-Mo alloy:

$$\log P = 7.3 + 3.95N \frac{(47N - 14.16N^2 + 110.69)\cdot 10^3}{4.574T} \qquad (6)$$

where N - molybdenum atomic fraction, T - temperature, °K
The expression in the numerator expresses the change in the

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Tension of titanium ... S/126/62/014/005/014/015
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latent evaporation heat of titanium as a function of the composition. This equation is satisfactory for Ti-Mo alloys with Mo contents up to 34 wt.% in the temperature range 1600 to 1800°K. Comparison of the values calculated from the experimental results with those calculated according to Raoult's law shows that the former are lower, as was to be anticipated, indicating that the bond energy between titanium and molybdenum atoms is higher than the bond energy between titanium atoms. There are 1 figure and 1 table.

ASSOCIATION: Khar'kovskiy gosudartsvennyy universitet imeni A. M. Gor'kogo
(Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: May 3, 1962

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method by determining the evaporation rate of Ti from [illegible]
ed electrically in vacuum. In the initial stage, the Ti evaporation rate and the
[illegible] of the sample were practically constant, but as

[illegible] evaporation

[illegible]

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SHCHERBINSKIY, V.G., inzh.; KUZ'MIN, A.A., tekhnik

Ultrasonic control of thin welds. Svar. proizv. no.7:12-13 Jl '65.
(MIRA 18:8)